

NOTE ON THE FEEDING HABITS OF BROCHYMENA CAROLINENSIS (WEST.) IN FLORIDA.

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Whenever observations lead to discovery of new facts concerning habits, particularly dietary ones, of insects whose known behavior has been recorded only sketchily in the literature, it is always a good idea to publish such discovery for the benefit of future workers in the field.

During the past summer (1940) the author was fortunate enough to be able to spend two months in Florida, collecting insects and observing their habits. In this period some ten days were occupied in collecting in the vicinity of Orlando and Winter Park. On Route U. S. 441 at a small community called Fairvilla is the Pine Grove Tourist Camp. The cabins are built in the midst of a fine stand of the two long-leafed pines, *Pinus palustris* Mill., the Georgia yellow pine and *Pinus Caribaea* Morelet, the slash pine. It was on both these species that the pentatomid *Brochymena carolinensis* (West.) was found in abundance, usually busily engaged in feeding from the tree trunks.

The insects were found only between the hours of eight and eleven in the morning, not in the middle of the day and afternoon, occasionally at dusk and not during the night. During their periods of activity they take their positions in the wider crevices and cracks of the thick bark, selecting trees of about eight to ten inches in diameter, not frequenting smaller ones and occurring rarely on those of larger size. Almost every one of the hundred specimens taken was found within the basal five feet of the trunk, always on the shaded side of the tree and in a goodly number of instances, facing downward.

The selection of the deeper crevices and cracks not only offers physical protection to the bugs while engaged in feeding but also allows them to choose the smooth, flat, thinner bark at the bottoms of these cracks for their punctures. The beak of *Brochymena* is of the long thin type characteristic of the plant feeding pentatomids and not of the short stout type present in their predatory relatives. Hence they cannot satisfactorily pierce plant tissue of great thickness such as is presented by most of the bark surface of pines. *B. carolinensis* feeds apparently on the resinous deposits either in or just below these thin patches of the bark.

In the characteristic feeding posture the beak assumes a zig-zag

position. The first or proximal joint is retained horizontally within the folds of the bucculae; the second is directed forward at about a forty-five angle to the first; the third is extended backward at about a sixty degree angle to the second and the last and shortest one is bent at about a hundred and twenty degree angle to the third. The last joint is inserted for about half to three quarters of its length into the trunk. It thus can reach only into the bark or, if the latter happens to be thin enough, just below it to feed on the resinous deposits there and cannot tap the deeper fluids and sap of the tree. The fluid pitch apparently is its principal dietary component.

While feeding, the majority of the bugs raise their bodies in such a manner that the posterior end of the abdomen is well above the level of the head, i.e., the whole animal is inclined.

The limited time of activity as stated above is undoubtedly correlated with the temperature factor. Inactivity occurs during the heat of the day and comfort is found in the earlier morning and evening hours and in the shade. During the latter part of the morning it seems that these bugs ascend the trunks of their trees and during their resting periods nestle in the bases of the clusters of long pine needles. I have found them there but they were not feeding, although all conditions were favorable for their doing so. During the night they probably stay in the higher reaches of the trees and descend in the early morning to repeat their search for favorable feeding spots on the lower parts of the trunks.

I believe that this is the first record of the actual feeding by these bugs on pine. It has often been stated that they have been captured, resting on pine or hibernating beneath the bark but as far as I know there is no authentic statement that says that they suck the fluids of the tree. Pine juice is, apparently, a delectable diet for them. I wonder what nourishment there is in it for them.

Cicindela Patruela on Long Island—While examining the collection of Mr. Ragot I noticed two specimens of *Cicindela patruela* Dej. taken by him at Alley Pond on July 4, 1937. It is interesting to note that whereas the original species is to be found in some mountainous regions of New York State, the variety *C. patruela consentanea* Dej. is confined to the pine barren regions of Long Island.—BORYS MALKIN, New York City.